

Response to Notice of Non-Compliant Amendment

Applicant: Chien-Hua Chen et al.

Serial No.: 10/695,147

Filed: October 28, 2003

Docket No.: 10005237-3

Title: FLUID EJECTION DEVICE WITH A COMPOSITE SUBSTRATE

IN THE CLAIMS

Please cancel claims 1-9 without prejudice.

1-9. (Cancelled)

10. (Original) A method of fabricating a fluid ejection device comprising:

bonding a top surface of a first substrate to a bottom surface of a second substrate, wherein a patterned etch mask layer is formed on at least one of the top surface of the first substrate and the bottom surface of the second substrate; and

etching a fluid channel in the first and second substrate extending through an opening in the patterned etch mask layer.

11. (Original) The method of claim 10 further comprising thermally growing oxide on at least one of the top surface of the first substrate and the bottom surface of the second substrate to form the patterned etch mask.

12. (Original) The method of claim 10 further comprising heating the bonded substrates to thermally anneal them.

13. (Original) The method of claim 10 further comprising thinning the bonded substrates.

14. (Original) The method of claim 10 wherein the first and second substrates have different crystallographic orientations.

15. (Original) The method of claim 10 wherein the fluid channel is formed using a dry etch.

16. (Original) The method of claim 10 wherein the fluid channel is formed using a wet etch.

Response to Notice of Non-Compliant Amendment

Applicant: Chien-Hua Chen et al.

Serial No.: 10/695,147

Filed: October 28, 2003

Docket No.: 10005237-3

Title: FLUID EJECTION DEVICE WITH A COMPOSITE SUBSTRATE

17. (Original) The method of claim 10 wherein the fluid channel is formed using dry and wet etching.
18. (Original) A method of fabricating a fluid channel for a fluid ejection device comprising:
 - bonding a top surface of a first substrate to a bottom surface of a second substrate, wherein the top surface of the first substrate has a feed trench;
 - etching a feed hole from a top surface of the second substrate to the top surface of the first substrate; and
 - removing a remaining portion of the first substrate to form a fluid channel through the substrates.
19. (Original) The method of claim 18 further comprising aligning the first and second substrates prior to bonding.
20. (Original) The method of claim 18 further comprising heating the bonded substrates to thermally anneal them.
21. (Original) The method of claim 18 further comprising thinning the bonded substrate.
22. (Original) The method of claim 18 wherein the first and second substrates have different crystallographic orientations.
23. (Original) The method of claim 18 wherein the feed trench and feed hole are formed using a dry etch.
24. (Original) The method of claim 18 wherein the feed trench and feed hole are formed using a wet etch.
25. (Original) The method of claim 18 wherein the feed trench and feed hole are formed using dry and wet etching.

Response to Notice of Non-Compliant Amendment

Applicant: Chien-Hua Chen et al.

Serial No.: 10/695,147

Filed: October 28, 2003

Docket No.: 10005237-3

Title: FLUID EJECTION DEVICE WITH A COMPOSITE SUBSTRATE

26. (Original) The method of claim 18 further comprising removing an intermediate layer disposed between the first and second substrates to fluidically couple the top surface of the second substrate to the bottom surface of the first substrate.

27. (Original) A method of bonding two semiconductor substrates to form a printhead comprising:

aligning a top surface of a first substrate with a second substrate, wherein the first substrate has a fluid channel in the top surface;

heating first and second substrates to a first temperature in a partial vacuum;

and

placing the top surface of the first substrate in contact with the second substrate to form a bond.

28. (Original) The method of claim 27 further comprising heating the bonded substrates to a second temperature to thermally anneal.

29. (Original) The method of claim 27 wherein the bond is a silicon to silicon bond.

30. (Original) The method of claim 27 wherein the bond is a silicon to silicon dioxide bond.

31. (Original) The method of claim 27 wherein the bond is a silicon to silicon dioxide bond.

32. (Original) The method of claim 27 wherein the bond is a silicon to silicon nitride bond.

33. (Original) A method of bonding two semiconductor substrates to form a print head comprising:

providing a first substrate with top and bottom opposed planar surfaces with a patterned mask layer on the top planar surface;

providing a second substrate with top and bottom opposed planar surface;

Response to Notice of Non-Compliant Amendment

Applicant: Chien-Hua Chen et al.

Serial No.: 10/695,147

Filed: October 28, 2003

Docket No.: 10005237-3

Title: FLUID EJECTION DEVICE WITH A COMPOSITE SUBSTRATE

aligning the top surface of the first substrate with the second substrate;
heating the first and second substrates to a first temperature in a partial vacuum; and
placing the top surface of the first substrate in contact with the second substrate to
form a bond.

34. (Original) The method of claim 33 further comprising:
heating the bonded substrates to a second temperature to thermally anneal them.
35. (Original) The method of claim 33 wherein the bond is a silicon to silicon dioxide bond.
36. (Original) The method of claim 33 wherein the bond is a silicon dioxide to silicon dioxide bond.
37. (Original) The method of claim 33 wherein the bond is a silicon to silicon nitride bond.
38. (Original) The method of claim 33 wherein the bond is a silicon to silicon bond.